IN THE CLAIMS

Claim 1 (currently amended) A method for measuring ~~a gas consumption by means of a gas meter, in particular for measuring~~ a meterable gas energy supply in the private, public or industrial sphere, utilizing sensor signals (S), which are proportional to a flow rate of the gas, wherein

the signals are ~~being~~ determined by ~~the~~ a gas meter by means of a thermal flow sensor and the sensor signals (S) being output as energy value signals (S_E) on the basis of a calibration of the gas meter as energy meter, and wherein

a) a gas type is determined by the gas meter insofar as a non-combustible gas mixture is differentiated from a combustible gas mixture, and

b) the gas meter, in the presence of a non-combustible gas mixture, is operated with a calibration in mass or standard volume units (l/min) and, in the presence of a combustible gas mixture, with a calibration in energy units (kWh).

Claim 2 (previously presented) The method according to claim 1, wherein

a) by means of a thermal gas quality sensor, at least one gas type-dependent parameter (λ, c, α, η) of the gas mixture is determined, and

b) by comparison with known values of the parameter (λ, c, α, η) for known gases or gas mixtures, the gas mixture is identified as combustible or non-combustible.

Claim 3. (currently amended) The method according to claim 2, wherein

a) the thermal flow sensor and the gas quality sensor comprise the same unit ~~have an identical sensor construction~~, the gas mixture being guided over a first temperature sensor, a heating element and a second temperature sensor, and

b) from a difference of temperature signals of the temperature sensors, a mass flow signal (S_M) is determined and, from a sum of the temperature signals (T_1 + T_2) or from the temperature signal of the first temperature sensor alone, a gas type-dependent heat coefficient (λ, c, α) is determined.

Claim 4 (currently amended) The method according to claim 1, wherein

a) the sensor determines a measured heat conductivity (λ) which is tested for correspondence to a heat conductivity value corresponding to an absolute value of 0.026 W/mK for nitrogen, oxygen or air, in particular 0.0260 W/mK for nitrogen, 0.0263 W/mK for oxygen or 0.0261 W/mK for air, or 0.0168 W/mK for carbon dioxide, a prescribable tolerance of ± 10% being taken into account,

b) in the case of correspondence, the gas mixture is categorized as non-combustible and a signal output of the gas meter is operated with a scale which is calibrated in mass or standard volume units (l/min), and

c) in the case of non-correspondence, the gas mixture is categorized as combustible and a signal output of the gas meter is operated with a scale which is calibrated in energy units (kWh).

Claim 5 (previously presented) The method according to claim 1, wherein

a) a measured heat capacity (c) is compared with a threshold value corresponding to an absolute value of 1300 J/kgK, a prescribable tolerance of ± 10% being taken into account,

b) upon falling below the threshold value, the gas mixture is categorized as non-combustible and a signal output of the gas meter is operated with a scale which is calibrated in mass or standard volume units (l/min), and

c) upon exceeding the threshold value, the gas mixture is categorized as combustible and a signal output of the gas meter is operated with a scale which is calibrated in energy units (kWh).

Claim 6 (previously presented) The method according to claim 1, wherein

a) it is tested periodically whether the gas meter is in contact with a combustible gas, in particular natural gas, or with a non-combustible gas, in particular nitrogen or air, and/or

b) measuring intervals for determining sensor signals (S) are chosen to be large, in the presence of a non-combustible gas mixture, and are chosen to be small, in the presence of a combustible gas mixture.

Claim 7 (currently amended) The method according to claim 1, wherein a consumed supply of gas energy is integrated in the gas meter which can be calibrated in mass or standard volume (l/min) units, and which can be switched therebetween, and, when switching the calibration to mass or standard volume units (l/min), is stored intermediately and, when switching back to energy units (kWh), is used as start value.

Claim 8 (currently amended) The method according to claim 1, wherein the flow rate (S_M) is integrated in mass or standard volume units (l/min) in the gas meter, and

a) the flow rate (S_M), when switching the calibration to energy units (kWh), is further incremented ~~and in particular output~~, or

b) the integrated flow rate is stored intermediately and in particular output and, when switching back to mass or standard volume units (l/min), is used as start value or is set back to zero as start value.

Claim 9 (currently amended) The method according to claim 1, wherein

a) by means of an indicator or display, it is displayed whether the gas meter is in contact with air or natural gas or a mixture of air and natural gas, and/or

b) due to a default setting of the gas meter, mass or standard volume units (l/min) are indicated and energy units (kWh) are indicated only upon a first contact with useful gas, in particular natural gas, and/or

c) by means of a first initialization of the gas meter, in particular during assembly, the calibration is switched automatically from mass or standard volume units (l/min) ~~or~~ for air to energy units (kWh) for ~~or~~ natural gas, and/or

d) upon contact with air, natural gas and again air, a manipulation indicator of the gas meter is activated.

Claim 10 (currently amended) The method according to claim 1, wherein sensor signals (S) dependent upon the flow rate of a calibration gas are determined for the calibration of the gas meter as energy meter and in the form of a sensor calibration curve (F(S)) are stored in the gas meter, the sensor calibration curve (F(S)) being corrected with a signal conversion factor (f_{N2-CH}) and with a heat value factor (H_{CH}) for a basic gas mixture (CH) and the ~~obtained~~ product obtained by this correction indicating a gas consumption in the energy unit (kWh) or in an output unit.

Claim 11 (previously presented) A gas meter for measuring a gas consumption according to claim 1.

Claim 12 (currently amended) A gas meter for measuring a ~~gas consumption, in particular a~~ meterable gas energy supply in the private, public or industrial sphere, the gas meter having a thermal flow sensor which sensor is also used to determine gas composition of the gas mixture and being calibrated in energy units (kWh) as energy meter, wherein

a) the gas meter is calibrated in addition as mass flowmeter in mass or standard volume units (l/min),

b) the gas meter has a gas quality sensor which generates a discrimination signal, in particular a gas type-dependent parameter (λ, c, α, η) in order to differentiate a combustible gas mixture from a non-combustible gas mixture, and

c) the gas meter can be switched over on the basis of the discrimination signal between an operation as energy meter or as mass flowmeter.

Claim 13 (currently amended) The gas meter according to claim 12, wherein

~~a) the thermal flowmeter and the gas quality sensor have an identical construction, and/or~~

~~b)~~ the thermal flow sensor ~~and/or the gas quality sensor are~~ comprises CMOS anemometers with a heating wire and temperature sensors which are disposed upstream and downstream.

Claim 14 (previously presented) The gas meter according to claim 12, wherein

a) the thermal flow sensor can be operated as a gas quality sensor if a measured mass flow rate falls below a prescribable threshold value, or

b) the gas quality sensor is disposed in a region with a constant flow rate, in particular with extensively static gas.

Claim 15 (previously presented) The gas meter according to claim 12, wherein

a) the gas meter has an indicator or a display for gas quality, in particular for the presence of calibration gas or useful gas, preferably air, natural gas or air/natural gas mixture, and/or

b) the gas meter has a manipulation indicator which can be activated upon changing contact with a non-combustible gas, in particular calibration gas, a combustible gas or useful gas and again a non-combustible gas, in particular an environmental gas, and/or

c) the gas meter has a measuring and evaluating unit for determining energy consumption values (S_E) and/or mass flow values (S_M), and/or

d) the gas meter has separate data memories for storing energy consumption values (S_E) and mass flow values or standard volume flow values (S_M).